

REMARKS

The Examiner is thanked for the due consideration of the application. The specification has been amended to insert headings. A substitute abstract has been provided.

Claims 16-37 are pending in the application. Claim 16 has been amended to recite that Fe_2O_3 is an impurity. This amendment is based on the passage page 5, lines 10 and 11 of the specification. In addition, the description of obtaining the claimed green part has been deleted from claim 16 and made the object of a new depending claim 36. This amendment is based on the passage page 2, lines 1 to 7 of the specification. Also, Na_2O has been deleted. Na_2O has also been deleted from claims 17, 21-25, and 29.

Support for new claims 30 and 31 can be found in the specification at page 4, lines 28 and 29. Support for new claim 32 can be found in the specification at page 3, lines 1-3. New claim 33 recites subject matter generally found in claims 16 and 26. Support for new claim 34 can be found in the specification at page 4, line 29. New claim 35 finds support in, e.g., Table 1 of the specification. New independent claims 33 and 37 set forth additional embodiments of the invention.

No new matter is believed to be added to the application by this amendment.

Information Disclosure Statement

Attached to this paper are copies of DE 38 42 280 A1 and GB 2 147 287 A, which were first cited in the international search report. The Examiner is respectfully requested to consider these references and to make an initialed PTO-1449 form of record in the next Official Action.

The Abstract

The abstract is objected to as not reflecting the disclosed ranges. A substitute abstract with clear ranges has been provided.

Rejection Over RAINE et al.

Claims 16-25 and 28 have been rejected under 35 USC §102(B) as being anticipated by RAINE et al. (U.S. Patent 3,353,976). This rejection is respectfully traversed.

The present invention, as typified in independent claim 16, pertains to a green part formed from $40\% \leq \text{Al}_2\text{O}_3$, $0\% \leq \text{ZrO}_2 \leq 41\%$, $2\% \leq \text{SiO}_2 \leq 22\%$, $1\% < \text{Y}_2\text{O}_3 + \text{V}_2\text{O}_5 + \text{TiO}_2 + \text{Sb}_2\text{O}_3 + \text{Yb}_2\text{O}_3$, Fe_2O_3 being an impurity.

RAINE et al. pertains to a product that must contain from 1 to 2% Fe_2O_3 (see column 1, lines 44-54, Examples 1 and 2, claim 1).

To obtain such a content of iron oxide, iron oxide is added to the starting charge. Fe_2O_3 is therefore not an impurity, such as is set forth in claim 16 of the present invention.

RAINE et al. thus fails to anticipate independent claim 16 of the present invention. Claims depending upon claim 16 are patentable for at least the above reasons.

Regarding claim 32, RAINE et al. fails to disclose or infer that synthetic bauxite may be used in a region of a glass making furnace for the manufacture of soda lime or extra white soda lime glass. In fact, the presence of Fe would have taught the man of ordinary skill and creativity away from this application since it may lead to coloring of the glass.

Regarding, claim 33, RAINE et al. fails to disclose or infer the addition of yttria.

This rejection is believed to be overcome, and withdrawal thereof is respectfully requested.

Rejection Over BRASHEAR et al.

Claims 16-18, 20, 23 and 29 have been rejected under 35 USC §102(B) as being anticipated by BRASHEAR et al. (U.S. Patent 4,119,472). This rejection is respectfully traversed.

Independent claim 16 of the present invention recites "1% < $Y_2O_3 + V_2O_5 + TiO_2 + Sb_2O_3 + Yb_2O_3$." That is, the amount of these materials is greater than 1%.

In BRASHEAR et al., the total content of these oxides is much less than 1%. In particular, in sample F, it is about 0.1% due to the presence of TiO_2 .

BRASHEAR et al. thus fail to anticipate independent claim 16 of the present invention. Claims depending upon claim 16 are patentable for at least the above reasons.

Regarding claim 33, BRASHEAR et al. fail to disclose or infer the addition of yttria.

Regarding claim 37, in BRASHEAR et al. Na_2O and TiO_2 are not added "to a mixture of raw materials," but AZS grains containing Na_2O and TiO_2 are added to the mixture of raw materials.

This rejection is believed to be overcome, and withdrawal thereof is respectfully requested.

Rejection Over GUIGNOIS et al.

Claims 16-18, 20, 23 and 29 have been rejected under 35 USC §102(B) as being anticipated by GUIGNOIS et al. (U.S. Patent 4,308,067). This rejection is respectfully traversed.

Independent claim 16 of the present invention recites " $1\% < \text{Y}_2\text{O}_3 + \text{V}_2\text{O}_5 + \text{TiO}_2 + \text{Sb}_2\text{O}_3 + \text{Yb}_2\text{O}_3$." That is, the amount of these materials is greater than 1%.

GUIGNOIS et al. fail to disclose or infer any composition that would contain more than 1% of $\text{Y}_2\text{O}_3 + \text{V}_2\text{O}_5 + \text{TiO}_2 + \text{Sb}_2\text{O}_3 + \text{Yb}_2\text{O}_3$.

GUIGNOIS et al. thus fail to anticipate independent claim 16 of the present invention. Claims depending upon claim 16 are patentable for at least the above reasons.

Regarding claim 33, GUIGNOIS et al. fail to disclose or infer the addition of yttria.

Regarding claim 37, in GUIGNOIS et al. Na_2O and TiO_2 are not added "to a mixture of raw materials," but are included through fused cast grains containing, as main constituents, ZrO_2 , Al_2O_3 and SiO_2 , or ZrO_2 , Al_2O_3 , SiO_2 and Cr_2O_3 .

This rejection is believed to be overcome, and withdrawal thereof is respectfully requested.

Rejection Over ROSENFLANZ et al. and RAINE et al.

Claims 16 and 26-28 have been rejected under 35 USC §103(a) as being unpatentable over ROSENFLANZ et al. (U.S. Patent 7,101,819) in view of RAINE et al. This rejection is respectfully traversed.

Claims 16 to 36 of the present invention pertain to "green parts" for a sintering process.

ROSENFLANZ et al. pertain to a "glass ceramic" and to amorphous material to make glass ceramic. As explained at column 3, lines 16-17 of ROSENFLANZ et al., "glass ceramic" refers to ceramic formed from **crystals formed by heat-treating amorphous material**.

Amorphous material is the result of a fusion process at high temperature, as explained column 2, lines 38-43 of ROSENFLANZ et al., or at the passage from column 10, line 47 to column 11, line 23. Amorphous material is therefore very homogeneous and presents a very low porosity.

In ROSENFLANZ et al., the amorphous material is at least partially crystallized through conventional nucleation and

crystal growth steps (see, e.g., the passage from column 17, line 32 to column 18, line 22), to obtain glass-ceramic. **The crystals are therefore usually very well distributed in the product.**

In a green part as according to present claim 16, the porosity is higher than in amorphous material or in glass-ceramic.

Moreover, because of this porosity, **the crystals in a green part cannot be as evenly distributed as in conventional glass-ceramic.**

In addition, the sintering of a green part according to claim 16 would not lead to glass-ceramic as described in ROSENFLANZ et al. Indeed, the porosity and uniformity of a crystal distribution of the sintered product would remain different than in glass-ceramic.

As a result, glass-ceramic (on one hand) and sintered products and green parts (on the other hand) are fundamentally different in structure.

Also, the manufacturing of glass-ceramic presents specific constraints. In particular, it first requires a fusion step to make amorphous material (at a temperature much higher than a sintering temperature). Subsequently, a heat-treatment with two conventional successive steps (nucleation, crystal growth) is performed. Glass-ceramic and sintered products therefore belong

to different technical fields, with **different manufacturing constraints**.

In addition, ROSENFLANZ et al. relate to abrasives, which is a different technical field from refractories for glass making furnaces. ROSENFLANZ et al. only refer to the use of alumina-zirconia based ceramics as refractories and thermal barriers in a **very general part** of the description dealing of the prior art. In the same part, it also specifies that such materials have been used as fines, abrasive particles, cutting tool inserts, grinding media, fibers and corrosion resistance coatings, and explains that various techniques such as sintering, hot pressing, HIP, sol-gel processing, fusion and plasma processing have been used. No details about these applications or about these techniques are provided. ROSENFLANZ et al. are thus non-analogous art.

Moreover, the constituents of the refractories used in these different applications and the manufacturing processes must be adapted to the desired applications.

ROSBNFLANZ is directed to abrasive particles and *a priori*, the man of ordinary skill and creativity in the art would not have turned to ROSENFLANZ et al. for teachings pertaining to refractories for glass making furnaces.

The teachings of RAINE et al. fail to address the deficiencies of ROSENFLANZ et al.

One of ordinary skill and creativity in the art would thus fail to produce independent claim 16 of the present invention

from ROSENFLANZ et al. and RAINE et al. A *prima facie* case of unpatentability has thus not been made. Claims depending upon claim 16 are patentable for at least the above reasons.

This rejection is believed to be overcome, and withdrawal thereof is respectfully requested.

Conclusion

Prior art of record but not utilized is believed to be non-pertinent to the instant claims.

It is believed that the objections and rejections are believed to be overcome, obviated or rendered moot, and that no issues remain. The Examiner is accordingly respectfully requested to place the application in condition for allowance and to issue a Notice of Allowability.

Please charge the fee of \$210 for the extra independent claim added herewith to our credit card set forth in the attached Credit Card Payment Form.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any

overpayment to Deposit Account No. 25-0120 for any additional
fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

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APPENDIX:

The Appendix includes the following item(s):

- a substitute Abstract of the Disclosure
- Copies of DE 38 42 280 A1 and GB 2 147 287 A
- Copy PTO-1449 form of February 28, 2006